

**CLAIMS:**

What is claimed is:

1 1. A reduced sensitivity spin valve sensor apparatus,  
2 comprising:  
3       a spin valve sensor; and  
4       a pair of magnetic shields, wherein a spacing  
5 between the spin valve sensor and each magnetic shield of  
6 the pair of magnetic shields is reduced relative to  
7 standard spin valve sensor apparatus to thereby reduce a  
8 flux injection efficiency of the spin valve sensor.

1  
1 2. The reduced sensitivity spin valve sensor apparatus  
2 of claim 1, wherein the spacing between the spin valve  
3 sensor and each magnetic shield is reduced by decreasing  
4 a thickness of an insulating layer between the spin valve  
5 sensor and the magnetic shields.

1  
1 3. A spin valve sensor apparatus, comprising:  
2       a first spin valve sensor;  
3       a second spin valve sensor; and  
4       at least one flux guide, wherein a flux generated by  
5 the at least one flux guide is shared between the first  
6 spin valve sensor and the second spin valve sensor to  
7 thereby reduce a sensitivity of the spin valve sensor  
8 apparatus.

1  
1 4. The spin valve sensor apparatus of claim 3, wherein  
2 the sharing of the flux between the first spin valve

3 sensor and the second spin valve sensor reduces a flux  
4 injection efficiency of the spin valve sensor apparatus.

1

1 5. The spin valve sensor apparatus of claim 3, wherein  
2 the at least one flux guide includes a top flux guide and  
3 a bottom flux guide.

1

1 6. The spin valve sensor apparatus of claim 5, wherein  
2 the top flux guide is positioned between the first spin  
3 valve sensor and the second spin valve sensor, and the  
4 bottom flux guide is positioned nearest a side of the  
5 second spin valve sensor that is furthest away from the  
6 first spin valve sensor.

1

1 7. The spin valve sensor apparatus of claim 3, further  
2 comprising planars, wherein the second spin valve sensor  
3 is positioned on the planars.

1

1 8. A method of making a reduced sensitivity spin valve  
2 sensor apparatus, comprising:

3 providing a spin valve sensor; and  
4 providing a pair of magnetic shields, wherein a  
5 spacing between the spin valve sensor and each magnetic  
6 shield of the pair of magnetic shields is reduced  
7 relative to standard spin valve sensor apparatus to  
8 thereby reduce a flux injection efficiency of the spin  
9 valve sensor.

1

1 9. The method of making a reduced sensitivity spin  
2 valve sensor apparatus of claim 8, wherein the spacing

3 between the spin valve sensor and each magnetic shield is  
4 reduced by decreasing a thickness of an insulating layer  
5 between the spin valve sensor and the magnetic shields.

1

1 10. A method of making a spin valve sensor apparatus,  
2 comprising:

3 providing a first spin valve sensor;  
4 providing a second spin valve sensor; and  
5 providing at least one flux guide, wherein a flux  
6 generated by the at least one flux guide is shared  
7 between the first spin valve sensor and the second spin  
8 valve sensor to thereby reduce a sensitivity of the spin  
9 valve sensor apparatus.

1

1 11. The method of making a spin valve sensor apparatus  
2 of claim 10, wherein the sharing of the flux between the  
3 first spin valve sensor and the second spin valve sensor  
4 reduces a flux injection efficiency of the spin valve  
5 sensor apparatus.

1

1 12. The method of making a spin valve sensor apparatus  
2 of claim 10, wherein providing the at least one flux  
3 guide includes providing a top flux guide and a bottom  
4 flux guide.

1

1 13. The method of making a spin valve sensor apparatus  
2 of claim 12, wherein providing the top flux guide  
3 includes positioning the top flux guide between the first  
4 spin valve sensor and the second spin valve sensor, and  
5 providing the bottom flux guide includes positioning the

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

6 bottom flux guide nearest a side of the second spin valve  
7 sensor that is furthest away from the first spin valve  
8 sensor.

1

1 14. The method of making a spin valve sensor apparatus  
2 of claim 3, further comprising providing planars, wherein  
3 providing the second spin valve sensor includes  
4 positioning the second spin valve sensor on the planars

100 100 100 100 100 100 100 100 100 100